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XXIII. *A Letter from Mr. Christopher Gullet to Matthew Maty, M. D. Sec. R. S. on the Effects of Elder, in preserving Growing Plants from Insects and Flies.*

Tavistock (Devon) August 11, 1771.

S I R,

Read May 14, 1771. I SHOULD not presume to trouble you as a member of the Royal Society with the following letter, did not the subject seem to promise to be of great public utility. It relates to the effects of Elder ;

Sambucus fructu in um'ella nigro.

1st. In preserving cabbage plants from being eaten or damaged by caterpillars.

2d. In preventing blights, and their effects on fruit and other trees.

3d. In the preservation of crops of wheat from the yellows, and other destructive insects.

4th. Also in saving crops of turnips from the fly, &c. &c.

1st, I was led to my first experiments, by considering how disagreeable and offensive to our olfactory nerves the effluvia emitted by a brush of green elder

elder leaves are, and from thence, reasoning how much more so they must be to those of a butterfly, whom I considered as being as much superior to us in delicacy as inferior in size. Accordingly I took some twigs of young elder, and with them whipt the cabbage plants well, but so gently as not to hurt them, just as the butterflies first appeared; from which time, for these two summers, though the butterflies would hover and flutter round them like gnomes or sylphs, yet I could never see one pitch, nor was there I believe a single caterpillar blown, after the plants were so whipt; though an adjoining bed was infested as usual.

2d. Reflecting on the effects abovementioned, and considering blights as chiefly and generally occasioned by small flies, and minute insects, whose organs are proportionably finer than the former, I whipt the limbs of a wall plumb tree, as high as I could reach; the leaves of which were preserved green, flourishing, and unhurt, while those not six inches higher, and from thence upwards, were blighted, shrivelled up, and full of worms. Some of these last I afterwards restored by whipping with, and tying up, elder among them. It must be noted, that, this tree was in full blossom at the time of whipping, which was much too late, as it should have been done once or twice before the blossom appeared. But I conclude from the whole, that if an infusion of elder was made in a tub of water, so that the water might be strongly impregnated therewith, and then sprinkled over the tree, by a hand engine, once every week or fortnight, it would effectually
answer

answer every purpose that could be wished, without any possible risk of hurting the blossoms or fruit.

3d. What the farmers call the yellows in wheat, and which they consider as a kind of mildew, is in fact, as I have no doubt but you well know, occasioned by a small yellow fly with blue wings, about the size of a gnat. This blows in the ear of the corn, and produces a worm, almost invisible to the naked eye; but being seen through a pocket microscope, it appears a large yellow maggot of the colour and gloss of amber, and is so prolific that I last week distinctly counted 41 living yellow maggots or insects, in the husk of one single grain of wheat, a number sufficient to eat up and destroy the corn in a whole ear. I intended to have tried the following experiment sooner; but the dry hot weather bringing on the corn faster than was expected, it was got and getting into fine blossoms ere I had an opportunity of ordering as I did; but however the next morning at daybreak, two servants took two bushes of elder, and went one on each side of the ridge from end to end, and so back again, drawing the elder over the ears of corn of such fields as were not too far advanced in blossoming. I conceived, that the disagreeable effluvia of the elder would effectually prevent those flies from pitching their tents in so noxious a situation; nor was I disappointed, for I am firmly persuaded that no flies pitched or blowed on the corn after it had been so struck. But I had the mortification of observing the flies (the evening before it was struck) already on the corn (six, seven or eight, on a single ear) so that what damage hath accrued, was done before

before the operation took place; for, on examining it last week, I found the corn which had been struck pretty free of the yellows, very much more so than what was not struck. I have, therefore, no doubt but that, had the operation been performed sooner, the corn would have remained totally clear and untouched. If so, simple as the process is, I flatter myself, it bids fair to preserve fine crops of corn from destruction, as the small insects are the crops greatest enemy. One of those yellow flies laid at least eight or ten eggs of an oblong shape on my thumb, only while carrying by the wing across three or four ridges, as appeared on viewing it with a pocket microscope.

4th. Crops of turnips are frequently destroyed, when young, by being bitten by some insects, either flies or fleas; this I flatter myself may be effectually prevented, by having an elder bush spread so as to cover about the breadth of a ridge, and drawn once forward and backward by a man over the young turnips. I am confirmed in this idea, by having struck an elder bush over a bed of young collyflower plants, which had begun to be bitten, and would otherwise have been destroyed by those insects; but after that operation it remained untouched.

In support of my opinion, I beg leave to mention the following fact from very credible information, that about eight or nine years ago this county was so infested with cock chaffers or oakwebs, that in many parishes they eat every green thing, but elder; nor left a green leaf untouched besides elder bushes, which alone remained green and unhurt, amid the general devastation of so voracious a multitude. On reflecting

reflecting on these several circumstances, a thought suggested itself to me, whether an elder, now esteemed noxious and offensive, may not be one day seen planted with, and entwining its branches among, fruit trees, in order to preserve the fruit from destruction of insects: and whether the same means which produced these several effects, may not be extended to a great variety of other cases, in the preservation of the vegetable kingdom.

The dwarf elder (*ebulus*) I apprehend emits more offensive effluvia than common elder, therefore must be preferable to it in the several experiments.

On mentioning lately to Sir Richard W. Bampfylde, one of the representatives of this county, my observations on the corn crops, and the effects of the elder, &c. he persuaded me to publish them, which in some measure determined my taking this step, of transmitting them to a Society incorporated for promoting the knowledge of natural things, and useful experiments, in which they have so happily and amply succeeded, to the unspeakable advantage and improvement both of the old and new world. I have the honour to subscribe myself,

SIR,

Your most obedient,

humble Servant,

Chr. Gullett.